

Extensible Business Reporting Language (XBRL):

What's In It for Internal Auditors

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Disclosure

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PREFACE

This research was initiated at the third annual IT Auditing Research Symposium in July 2008, organized by The Institute of Internal Auditors' (IIA's) International Advanced Technology Committee (ATC) and The IIA Research Foundation (IIARF). The purposes of the symposium are to discuss challenging information technology (IT) audit issues and create a pipeline for research on valuable IT audit topics. One of the topics presented at the symposium was "XBRL - The Impact on Assurance, New Challenges for the Audit Profession." The discussion led to agreement on the need for The IIA to provide guidance on internal auditing's role in Extensible Business Reporting Language (XBRL). This research provides an overview of XBRL and the opportunity it presents for internal auditors to provide value throughout the entire compliance and reporting process.

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Gianluca Garbellotto is an internationally known expert on the business and technical aspects of XBRL and XBRL Global Ledger Framework (XBRL GL), and has extensive experience in their implementation in the public and private sectors. He is the current chair of the XBRL Global Ledger Working Group, a past member of the XBRL Standards Board, and the XBRL columnist for the International Management Association's (IMA's) *Strategic Finance* magazine.



As an active member of various working groups within the XBRL International Consortium, he has helped lead the development of XBRL's standards for internal use and has been a strong influence on XBRL's technical specifications. He is a frequent and sought-out lecturer and trainer on XBRL and XBRL GL topics.

Garbellotto has extensive experience in the banking and financial industry as well as in accounting and financial software development and implementation, with a specific focus on enterprise resource planning (ERP) systems, consolidation/business intelligence applications, and XML/XBRL implementations. His clients' portfolios include global organizations and governments in various countries as well as leading professional, consulting, and technology firms.

1. Why Should Internal Auditors Care About XBRL?

You may have heard that “XBRL is coming.” Well, XBRL is not just “coming,” it is already here — and in places you may not have expected.

Extensible Business Reporting Language's (XBRL's) most visible applications involve streamlined preparation of customized regulatory reports and other public disclosures. However, its greatest business value proposition lies in enabling the transition from manual to automated accounting processes that address critical issues in the internal data integration and reporting environment, and doing so by leveraging the existing IT infrastructure rather than changing it. In other words, XBRL eliminates the need to integrate disparate database applications for entitywide reconciliation and consolidation purposes since it creates a universal language for every piece of data that can be understood by any application. As a result, internal auditors can monitor information flows for anomalous activity much more efficiently and frequently using off-the-shelf computerized audit tools such as IDEA and ACL software.

The factors driving the adoption of XBRL by regulators worldwide are the process efficiencies, information transparency, and significant cost savings that it brings in dissemination and analysis. These are obviously key processes and benefits in the internal environment as well. XBRL is — and should be — embedded as deeply within corporate information systems as necessary to achieve the benefits and the compliance with external reporting requirements.

The management in an organization has overall responsibility for ensuring that accurate and complete financial statements are produced in XBRL format. Internal auditors can help management implement XBRL and provide objective assurance on the XBRL adoption and conversion process. To do so, internal auditors should first understand the new interactive reporting format, mandate requirements, and pros and cons of various implementation approaches.

Also, moving beyond what is strictly necessary in responding to a regulatory mandate helps gain awareness of the different approaches to XBRL implementation, and of the value it brings throughout the entire compliance and reporting process — from the initial transaction at the business-unit level to the release of the group financial statements or management report. This allows one to turn what many perceive as an obligation into an opportunity to make XBRL work within the organization's internal environment. It also translates into great opportunities for internal auditors by:

- Enabling them to move from statistical testing to testing 100 percent of the relevant data, and creating conditions for the transition to a continuous auditing/monitoring model.
- Allowing for a reduction or elimination of manual intervention and a greater ability to apply centralized and standardized business rules, which translates into a significant reduction in the overall level of risk.
- Providing a way to operate on a standardized data model and offering controls and analytics that can be easily and consistently shared, which opens the opportunity for a different, straightforward, and effective model of communication and collaboration with external auditors.
- Offering a reliable, standardized, and quickly deployable model in situations where it is critical to extend the corporate internal controls and procedures to a new information system as rapidly and effectively as possible — such as in the case of a merger or acquisition. In the same way, a

standardized, shareable, “executable” internal audit program can be a key success factor in a joint venture.

The remainder of this report is organized as follows:

- Section 2 presents further information about how XBRL works and the benefits of adoption.
- Section 3 provides an overview of global XBRL initiatives.
- Section 4 discusses the U.S. Securities and Exchange Commission’s (SEC’s) XBRL filing requirements.
- Section 5 presents three approaches to implementing XBRL, including lessons learned from early adopters.
- Section 6 examines XBRL applications beyond regulatory filings.
- Section 7 analyzes the implications of XBRL for internal auditors.
- Section 8 looks forward to where we go from here.
- Appendices provide a list of additional resources, a glossary, and references.

2. Introduction to XBRL

The official definition of XBRL from the XBRL International Web site¹ is “a language for the electronic communication of business and financial data, which is revolutionizing business reporting around the world.”

“Interactive data” is another definition frequently seen in press releases and official documents that is closer to the essence of XBRL within the scope of business reporting. But what does this mean in practical terms?

Intuitively, “interactive” conveys the idea of something that a user can directly access — and that can perform its functions through a minimal, intuitive interface of common availability. When discussing data and information, an analogy is a Web page on which a browser like Internet Explorer or Firefox allows the immediate access of text, pictures, audio, and video files. The files can be stored in a computer on the other side of the world or on the desktop of the colleague next door and may have been created using applications the user does not understand. However, with the click of a mouse, they become visible and usable because they are represented and embedded in HyperText Markup Language (HTML), the language in which Web pages are created. In other words, HTML provides a standard way to define how a page, paragraph, link, or title should look, and how pictures, sounds, and videos should be embedded.

XBRL does for business, accounting, financial, and nonfinancial information what HTML does for text and pictures. The difference is that once your browser displays the text searched for or the video you wanted to see, that's about it — your purpose in searching was to “read” or “watch” something. Once the data is on your screen, no further software processing is necessary — or possible.

In the case of business information, there is a lot more processing involved after displaying data — as any accounting and financial software can already do. First, searching must be more targeted. You may want to search and compare data from a certain entity within your organization or at a consolidated level for one or more periods of time. Or you may want to apply consistent and centrally managed controls and business rules to the data, regardless of the department or business unit, or which software application it is stored. You also may want to know various things about each piece of business information: What are the relevant accounting principles and applicable company policies?² What are the relevant risks and the controls or procedures that need to be applied?³ The XBRL reference linkbase provides a standardized method of creating explicit relationships between the concepts (e.g., data, relevant principles and/or company policies, controls, rules) that should and/or could be relevant and applied. These explicit relationships enable personnel and applications to access and understand the relationships that in many cases are only implicitly applied and/or available based upon current experience. For example, the current U.S. Generally Accepted Accounting Principles (GAAP) taxonomy includes explicit relationships between disclosure elements and related Financial Accounting Standards Board's (FASB's) standards and Regulation S-X items.

This is exactly what XBRL is — a language for the representation and communication of business and accounting information that facilitates later searching, reporting, and reconciling between and across

¹ <http://www.xbrl.org>

² See Introduction to XBRL — XBRL and XML below for more information.

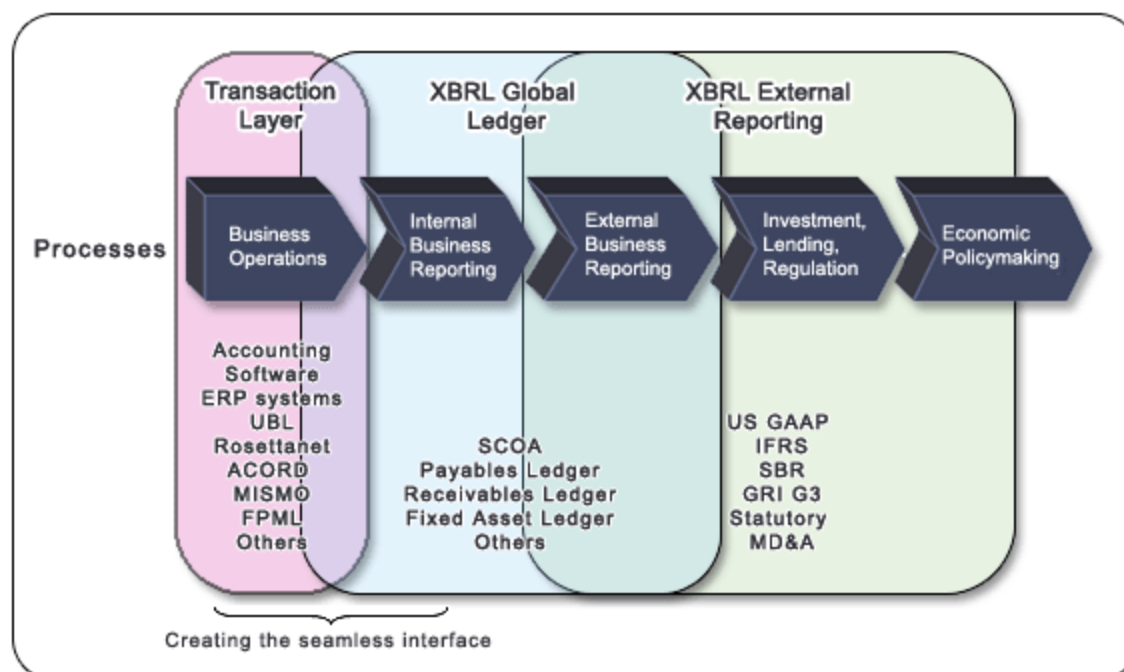
³ Risks, controls, and procedures in XBRL have already been applied and publicly discussed and are currently the focus of the activity of the Open Compliance and Ethics Group (OCEG) jurisdiction of XBRL International.

disparate systems. XBRL-structured information is interactive because XBRL is a standard, agreed-upon way of representing business information as found in end reports — internal or external — as well as the underlying data (i.e., transactions, documents, subledgers, ledgers, nonfinancial data) that roll up to those end reports. Just as you can search and read the text you need in your browser once it is “standardized” with HTML, you can do a lot of useful things with your business information once it is standardized with XBRL — things for which you would normally use one or more enterprise resource planning (ERP) system and/or consolidation/reporting packages. And with XBRL, you would use little more than a browser and not have to deal with lengthy and error-prone processes like reconciliation, retyping of data, analysis of Excel spreadsheets, etc.

The Business Reporting Supply Chain

We have been repeatedly referring to business, accounting, and financial information as the domain for which XBRL is relevant. This must be considered in the context of the business reporting supply chain (BRSC). Figure 1 shows the processes that are part of the BRSC and how XBRL as a whole fits into those processes.

Figure 1
XBRL and the Business Reporting Supply Chain⁴



In the **Transaction Layer**, transactions, entries, and documents are first initiated, authorized, and recorded into an information system. This is the trigger for the various steps within the BRSC where the

⁴ Acronyms used: ERP — Enterprise Resource Planning; UBL — Universal Business Language; ACORD — Association for Cooperative Operations Research and Development (insurance industry standard); MISMO — Mortgage Industry Standards Maintenance Organization; FPML — Financial Products Markup Language; SCOA — Standard Chart of Accounts; US GAAP — United States Generally Accepted Accounting Principles; IFRS — International Financial Reporting Standards; SBR — Standard Business Reporting; GRI — Global Reporting Initiative; MD&A — Management Discussion and Analysis.

transactions are processed and other related events are triggered (orders become invoices, invoices get paid, etc.) and eventually summarized and roll up to multiple internal and external reports. This is traditionally the space of ERP systems and accounting applications, but also more and more of industry- and domain-specific standards that provide an agreed-upon format to represent relevant data in a nonproprietary application and independent format. Some industry-based, transaction-oriented standards are listed in Figure 1.

The **XBRL Global Ledger (XBRL GL)**, to be discussed in more detail, is an XBRL taxonomy developed and maintained by the XBRL International Consortium that can represent detailed/transactional data and ledgers/subledgers — either stored in accounting software or represented in a standardized format — and the rules of their summarization into end reports for internal or external purposes. It has been designed as a bridge from the **Transaction Layer** to XBRL end reporting. The XBRL GL can be used to express company-specific ledgers and subledgers such as a standard chart of accounts, payables ledger, receivables or sales ledger, and fixed asset or property plant and equipment ledger. The XBRL GL used to articulate an organization's general ledger may have some overlap with individual external reporting concepts. This is represented by the overlap with the transaction layer and XBRL for external reporting shown in Figure 1.

XBRL external reporting (XBRL ER) is the more visible and better known use of XBRL to represent regulatory filings and other types of summarized external reports to which the underlying detailed data rolls up. There are a range of XBRL external reporting taxonomies currently available, including those for:

U.S. GAAP	http://xbrl.us/Pages/US-GAAP.aspx
IFRS	http://www.iasb.org/XBRL/IFRS+Taxonomy/IFRS+Taxonomy.htm
GRI G3	http://www.globalreporting.org/ReportingFramework/G3Guidelines/XBRL
Statutory	http://www.xbrl-ntp.nl/english and http://www.sbr.gov.au
MD&A	http://www.worldici.com/taxonomies.php

This area is also called XBRL for financial reporting (XBRL FR).

The Role of Data Standardization in the BRSC

At first sight, the BRSC processes analyzed in Figure 1 are all supported by ERP systems and/or consolidation/reporting packages. So why are data standards and XBRL, in particular, useful?

The main result that a standards-based approach achieves is independence from any particular application or software package. The information being exported from one system is theoretically indistinguishable from that same information coming from another system. A standards-based approach does not require the replacement of existing applications, but it does mean making them work and interact more effectively. And it provides more agility and facilitates the replacement of systems in a more controlled, efficient manner.

In practical terms, the benefits of application independence are:

- The ability to view, analyze, and process corporate data as one homogeneous flow, regardless of which software package they were created by or are stored in. This facilitates the reduction and possible elimination of the manual processes and reconciliations that are necessary to report consistently on data and processes that are not covered by any single ERP application, or to fill the gap between the reporting/consolidation requirements and the subset of them that is actually

fulfilled by the existing IT infrastructure. In particular, it allows organizations to dramatically reduce, if not completely eliminate, the highly manual process phenomenon known as “spreadsheet hell” — the proliferation of the use of spreadsheets to manually integrate data coming from different applications and to fulfill internal and external reporting requirements.

- Better protection of the IT investment — and of the related investment in internal knowledge, procedures, and training — because of the optimization of the existing infrastructure made possible by a standards-based approach.
- Vendor independence and greater flexibility in redesigning the IT infrastructure or changing it altogether when necessary.
- Faster, more effective data integration and interoperability in case of reorganization, merger, or acquisition.

XBRL and XML

Extensible Business Reporting Language (XBRL) is Extensible Markup Language (XML)⁵ — the W3C⁶ standard for data representation that has achieved an unprecedented fast and successful adoption worldwide — optimized for the abstraction of business and financial information, analytics, controls, process designs, and relationships between all of these. To achieve this optimization, XBRL combines the use of XML Schema — a powerful and flexible tool that allows the definition of the structure of a report and its basic validation rules — with XLink, another XML-related specification that links each reporting concept (such as “cash and cash equivalents”) with multiple resources (such as labels in different languages and for different purposes, validation rules, definitions, calculations, authoritative references, internal guidance, libraries of risks, controls and procedures, and more).

⁵<http://www.w3c.org/XML/>

⁶<http://www.w3c.org>

Figure 2
Standard Resources Available in XBRL Taxonomies

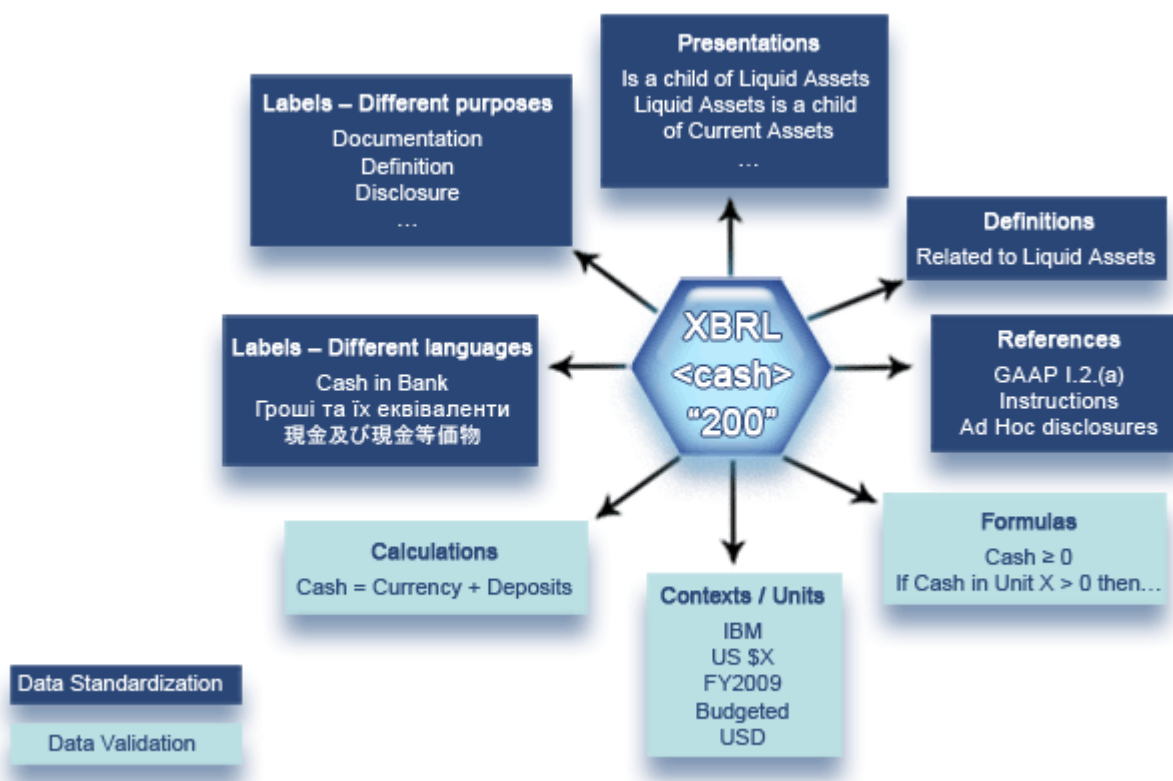


Figure 2 shows the main standard resources available for each reporting concept (XBRL item) in an XBRL taxonomy. Without going too deep into the technical features of XBRL, these resources can be divided into two broad categories:

- **Resources for the standardization of the information**, which include presentation linkbases, label linkbases in multiple languages and/or for multiple purposes, and reference linkbases pointing to external or internal guidance, business process guidance, relevant accounting standards, etc.
- **Resources for data validation**, which include the calculation linkbase that provides an internal mathematical validation on the item, context information about the value of the item (such as the period of time to which it refers), its unit of measure or its nature (actual, budgeted, forecasted, etc.), and the formula linkbase for the articulation of business rules or “macros” related to the XBRL item.

The result is a technology that is uniquely able to represent the peculiarities of business and financial information. XBRL is a multidimensional XML platform that can not only describe a complex structure, but also provide complex semantic meaning to each of its components and make it immediately available to either the internal or external user.

In conclusion, different features of XBRL are crucial at different levels, and they interact with each other to help achieve an overall process optimization.

3. Overview of XBRL

XBRL International Inc.

XBRL is built, maintained, and promoted by the XBRL International Consortium (<http://www.xbrl.org>), a not-for-profit organization that brings together more than 550 organizations and government agencies across the world. The activity of the Consortium is done by working groups composed of volunteers from member organizations. Working groups focus on specific deliverables — either technical or best practices materials and guidance.

XBRL International is organized into local jurisdictions, which focus on the advancement of XBRL adoption in each region or market area. An updated list can be found at <http://www.xbrl.org/jurisdictions.aspx>. It should be noted that some jurisdictions are not geographical. Organizations for which XBRL is particularly relevant may decide to form an XBRL jurisdiction to better coordinate XBRL-related initiatives in their own domains. Examples of this are the International Accounting Standards Board⁷ (IASB) Jurisdiction and the Open Compliance and Ethics Group⁸ (OCEG), a jurisdiction that is particularly relevant for internal auditing and compliance.

The contribution to the advancement of XBRL from many of these jurisdictions has been decisive. For example, XBRL Spain has been key in the work done by European banking regulators to create XBRL taxonomies to support Basel II requirements. Another example is the active involvement of XBRL US as a contractor to the SEC to build the U.S. GAAP taxonomies that are the backbone of the SEC's mandate.

⁷ <http://www.iasb.org/XBRL/XBRL.htm>

⁸ <http://www.oceg.org/Details/XBRLGRC>

Around the Globe with XBRL

A large number of organizations across the world are already using XBRL for their external reporting. Here is a list of some of the implementations around the world:

Country	Organization	Program/Application
Japan	Tokyo Stock Exchange (TSE)	TSE Registrant Financial Report Filings
	National Tax Agency (NTA)	eTax National Tax Return Filings
	Bank of Japan	Filing for Financial Reports
	Japan Financial Services Agency	EDINET — Electronic Disclosure for Investors Network
U.S.	Securities and Exchange Commission (SEC)	XBRL Voluntary Filer Program
	FFIEC/FDIC/FRS/OCC	Call Report Modernization
U.K.	Companies House	Accounts Filings
	HM Revenue and Customs	Company Tax Filings
China	China Securities Regulatory Commission	Interactive Data Filing for Financial Statements
Australia Netherlands	Australian Treasurer Ministry of Finance/Justice	Standard Business Reporting Program — Business-Centric Model
Singapore	Accounting and Corporate Regulatory Authority (ACRA)	Mandatory Filing for All Registrants
Korea	Financial Supervisory Service/DART	Mandatory Filing for All Registrants

SBR: “Convergence” Broadly Defined

The Standard Business Reporting (SBR) initiatives are cross-government, multi-agency projects aimed at reducing the administrative cost of compliance for businesses. The SBR model originated in early 2004 in The Netherlands with the Netherlands Taxonomy Project (NTP, <http://www.xbrl-ntp.nl/english>), and was then adopted by Australia in 2006/2007 (<http://www.sbr.gov.au/content/default.htm>). More recently (May 2008), the New Zealand government announced the decision to establish an SBR program.

These initiatives have particular relevance because they are focused on compliance broadly defined. This has some very important implications, including:

- SBR projects are based on a long-term partnership between the government and business community, an important element of novelty with respect to previous initiatives, and recognition that a structural change in compliance reporting processes requires the cooperation of all the parties involved in order to be successful.
- Their major outcome is the harmonization of the information that government requires from businesses, which is typically duplicated multiple times for different agencies.
- XBRL is the technical enabler of this process. The real value of SBR projects is the semantic agreement reached within the relevant government agencies on each data element required from businesses, and on their reuse rather than duplication. XBRL is the ideal platform to translate this semantic agreement at the technical level and enhance reusability of data elements and related resources, promoting and facilitating the harmonization process.

The benefits expected from the SBR initiatives are significant. The NTP estimates a 25 percent reduction in the administrative burden for businesses from the SBR project, and has already achieved an impressive reduction in the number of data elements that organizations have to report to various government agencies (from 200,000 to about 4,500). In Australia, the benefits for businesses are estimated at AU \$795 million per year on an ongoing basis, once SBR is fully established.

The issues that SBR initiatives address also are very relevant from an internal audit perspective. The harmonization of the various “data dictionaries” in use within a corporate information system — in different business units and/or software packages — to a common, standardized representation facilitates consistent analysis, validation, reporting, and assessment. XBRL helps achieve this goal without imposing the use of a companywide common format, because it is designed to support the creation of a corporate standardized “view” of business information to which relevant resources — such as libraries of entities, risks, and procedures, as well as executable, standardized controls — can be linked. The process of creating this standardized view of corporate data is the same process used in SBR programs around the world, and it has the same potential for rationalization and cost savings.

Basel II

The Committee of European Banking Supervisors (CEBS) has supported the creation of two XBRL taxonomies aimed at supporting banks and financial institutions in compliance with the future European Union capital requirements reporting regime, known as Basel II: The Common Solvency Ratios Reporting Framework (COREP) and the Financial Reporting (FINREP) taxonomies. For more information on the specific scope and features of the project, visit <http://www.corep.info>. Even though the choice of the technical implementation of the Basel II requirements is completely left to the discretion of the 27 countries that currently form the European Union, the majority of those countries have decided, or are seriously considering, the adoption of XBRL.

FFIEC/FDIC

At the end of 2005, the U.S. Federal Financial Institutions Examination Council (FFIEC) and the Federal Deposit Insurance Corporation (FDIC) implemented an XBRL-based process in the quarterly collection of financial data from U.S. banks. This project was largely based on the dissemination/application of standardized business rules, which XBRL data standardization makes possible, something that has broad and significant application in corporate internal processes as well. In particular, a key point in this implementation is the ability to validate data at the source — the bank information system — rather than in the consuming application, with evident advantages in terms of overall efficiency of the process and

accuracy of the data. In the same way, these advantages can be achieved and have a significant impact in internal auditing by disseminating and sharing business rules and controls across the organization.

Two years into the project, the FDIC reported substantial improvements in key process efficiency indicators. The percentage of error in the data received from banks went from 68 percent to five percent, the processing time went from 45/60 days to two days, and the number of people involved in the process went from 1,000 to 200. Visit <http://www.xbrl.org/us/us/FFIEC%20White%20Paper%2002Feb2006.pdf> for additional background on the FDIC implementation.

4. A Closer Look at the SEC's XBRL Filing Requirements

On May 30, 2008, three years into the launch of its Voluntary Filing Program, the SEC issued a proposed rule for the filing of financial statements using XBRL titled "Interactive Data for Financial Reporting." The full text of the proposed rule can be found at <http://www.sec.gov/rules/proposed/2008/33-8924.pdf>. This proposed rule is accompanied by a series of additional proposed rules and initiatives aimed at the introduction of interactive data for specific industries, including:

- June 10, 2008: Interactive Data for Mutual Fund Risk/Return — <http://www.sec.gov/rules/proposed/2008/33-8929.pdf>
- June 16, 2008: Proposed Rules for Nationally Recognized Statistical Ratings Organizations — <http://www.sec.gov/rules/proposed/2008/34-57967.pdf>
- June 26, 2008: Modernization of the Oil and Gas Reporting Requirements — <http://www.sec.gov/rules/proposed/2008/33-8935.pdf>

The main rule about interactive data in financial reporting was approved on December 17, 2008, and is published here: <http://www.sec.gov/rules/final/2009/33-9002.pdf>.

Summary of the SEC's "Interactive Data for Financial Reporting" Mandate:

- The rule requires organizations to provide the SEC with financial statements in an interactive data format using XBRL.
- The rule would apply to domestic and foreign organizations using U.S. GAAP and, eventually, to foreign private issuers using International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB).
- The required tagged disclosures would include organizations' primary financial statements, notes, and financial statement schedules. In addition, certain company identifier information would be required.
- The disclosure in interactive data format would supplement, but not replace or change, disclosure using the traditional electronic filing formats in ASCII or HTML.

Scope of Application and Phase-in

For public companies, interactive data financial reporting will occur on a phased-in schedule beginning in mid-2009. The rule includes a three-year phase-in schedule:

- In year 1: The largest organizations who file using U.S. GAAP with a public float above US \$5 billion as of the end of the second quarter of their most recent year-end (for many organizations this translates into June 30, 2008) will be required to provide interactive data reports starting with their first quarterly report for fiscal periods ending on or after June 15, 2009. This will cover approximately 500 organizations.

- In year 2, all other domestic and foreign large accelerated filers using U.S. GAAP would be subject to interactive data reporting.
- In year 3, all remaining filers using U.S. GAAP, including smaller reporting companies, and all foreign private issuers that prepare their financial statements in accordance with International Financial Reporting Standards (IFRS) as issued by the IASB would be subject to the same interactive data reporting requirements starting with fiscal years ending on or after June 15, 2011.

For each phase of implementation:

- The face of the financial statements would be tagged in each filer's first year of interactive data reporting.
- The financial statement footnotes and schedules also would be tagged in each filer's first year, but in block text only, meaning that a footnote would be tagged as a whole instead of assigning meaningful tags to specific, relevant information contained within the footnote itself. This is to ensure that the tagged content in the footnote can be analyzed, validated, and compared.
- After the first year of such tagging, a filer also would be required to tag the detailed disclosures within the footnotes and schedules.

Submission Timing

Interactive data would be required to be provided to the SEC and posted on company Web sites at the same time as the related report or registration statement, with two exceptions:

- A 30-day grace period would be permitted for the first interactive data exhibit of each filer.
- A 30-day grace period would be permitted for the first interactive data exhibit that is required to include the footnotes and schedules tagged in detail.

Submission Format

- Interactive data would be required with an organization's annual and quarterly reports, transition reports, and Securities Act registration statements.
- Interactive data also would be required to be posted on the organization's corporate Web site, if it maintains one.
- Filers that do not provide or post required interactive data on the date required would be deemed not current with their Exchange Act reports.

Status of Additional SEC Interactive Data Proposed Rules

Mutual Funds: The SEC press release of December 17, 2008, states that "Mutual funds will be required to begin including data tags in their public filings that supply investors with such information as objectives and strategies, risks, performance, and costs. This will allow investors to compare more than 8,000 mutual funds at the click of a mouse. A mutual fund also would be required to post the interactive

data on its Web site, if it maintains one.” Just like in the case of the “Interactive Data for Financial Reporting” rule, it is assumed that the final rule announced in the press release confirms the provisions of the proposed rule.

Nationally Recognized Statistical Ratings Organizations: The SEC has approved the rule on December 3, 2008. Again, the final rule has not been published at the date of release of this manuscript, but the expectation is that the proposed rule will be confirmed in its substance.

Modernization of Oil and Gas Reporting Requirements: The final SEC rule was published on December 31, 2008 (<http://www.sec.gov/rules/final/2008/33-8995.pdf>). It does not include a mandate on the use of XBRL within the industry, as a consequence of the comments received after the proposed rule was released. While most respondents were supportive of the use of XBRL for disclosures, they also recommended that the SEC wait until a stable and well-developed taxonomy exists for the oil and gas industry. The rule states: “We agree that much of the disclosures regarding oil and gas companies would be conducive to interactive data. We intend to continue to work on developing a taxonomy for such disclosure. Once a well-developed taxonomy is created, we will address this issue further. We are not, however, adopting interactive data requirements in this release. We will continue to consider whether to require interactive oil and gas disclosure filings in the future and, if so, when such filings should be required based on the development status of an oil and gas disclosure taxonomy.”

Other Relevant SEC Initiatives

- June 24, 2008, SEC Announces “21st Century Disclosure” Initiative to Fundamentally Rethink the Way Companies Report and Investors Acquire Information (<http://www.sec.gov/news/press/2008/2008-119.htm>)
- August 19, 2008, SEC Announces Successor to EDGAR Database (<http://www.sec.gov/news/press/2008/2008-179.htm>)

These two initiatives, and in particular the release of the successor of the EDGAR database — IDEA — Interactive Data Electronic Applications — are proof that, regardless of the approval and timing of the SEC’s proposed rule, “interactive data” is here to stay. The whole concept of IDEA revolves around the migration from a document-centric to a data-centric compliance model, which is sustainable only by leveraging the capabilities of XBRL to create a multidimensional semantic network of relationships between single reporting concepts and the various resources (accounting principles, guidance, validation rules, etc.) that are relevant for each of them.

Refer to Section 7 for relevant internal audit considerations.

5. Approaches to XBRL Implementation and Case Studies

There is no doubt that regulatory mandates, current or upcoming, are driving the adoption of XBRL worldwide. This is a major obstacle for organizations and other entities in understanding the real value of XBRL and developing a comprehensive strategy for its implementation because businesses tend to address the immediate concern of compliance with the new requirement, which usually translates in the conversion of a pre-existing regulatory report in XBRL format. This “bolt-on” approach to XBRL implementation — conversion of an external report to XBRL once it has been generated using pre-existing processes — is not where the real value proposition of XBRL for businesses lies.

A clear understanding of the value proposition of XBRL in its various forms, including those relevant for internal use, is key to a more proactive strategy on XBRL adoption. It turns the obligation of a new mandate, and the related additional costs of compliance, into an opportunity for substantial gains in terms of pervasive cost reductions and increased process efficiencies that go far beyond the scope of any external mandate. These different forms have been introduced previously in this work from the general perspective of their role within the BRSC, but it is useful to revisit them now with a specific focus on their value and use from the perspective of businesses.

XBRL for external reporting is the use of the XBRL specification to represent summarized reports, typically regulatory filings or public disclosures (see the examples provided in Figure 1). When used for external reporting, the key feature of XBRL is the ability to link reporting concepts — defined with XML Schema — to various related resources, like multiple labels (in different languages and/or for different purposes), legal and authoritative references, and calculations — using the XLink technology to define XBRL linkbases⁹. The result is a rich dictionary of business and financial concepts linked to resources that provide a common understanding optimized for the business and financial reporting domain. This dictionary is an XBRL taxonomy.

The rules for the creation of a specific report are embedded in the taxonomy rather than just “described” in a human readable (only) document. The rules can be used for the unambiguous validation of the report at the moment of its creation because they are the same ones the regulator uses to validate the report when it is received. The word “same” here is not used generically to indicate that there is a shared understanding on those rules driven by guidance issued by the regulator. It means that the producing and consuming applications actually use the same report format and run the same validation rules embedded in the taxonomy. This shared common machine-readable understanding provides the technical foundation enabling the “interactive data” process-enhancing features. The value proposition for regulators, analysts, and other entities that collect and analyze data from a large number of data producers is obvious. For businesses, XBRL for external reporting represents an opportunity to comply with mandates and with public disclosures in a more effective, less costly way. But limiting the analysis to its use for regulatory compliance can easily lead to the underestimation of its true potential, and to see it just as another format to submit a report rather than an opportunity for substantial process changes in many crucial internal processes.

XBRL for Internal Reporting — The Consumer-oriented Supply Chain. This use of XBRL is technically similar to the previous one, since it is based on the same concept of using the XBRL

⁹ See the glossary (Appendix B) and the Introduction to XBRL section on XBRL and XML in this report for more information on linkbases and other relevant XBRL features.

specification to define a set of business information concepts and the network of resources associated with each of them. But the implications and the associated benefits go far beyond regulatory compliance.

Effective internal reporting requires a consistent view on the whole universe of internal data. We are all aware of the challenges that this simple reality poses — different software packages used in different units or to deal with specific aspects of the corporate activity; different jurisdictional requirements and accounting practices; the way in which internal processes are designed and interact determines gaps that are usually filled with manual, inefficient, and error-prone processes.

The traditional solution to these issues is standardization based on a single software application. ERP applications have been conceived to meet these challenges by unifying all corporate data needs in a single, comprehensive software application. This model has not proved successful — no corporate information system is based solely on one instance of an ERP application and the ever-present use of spreadsheets to aggregate data from different applications, and for different purposes, provides sufficient evidence to support this statement. This does not mean that ERP systems are not useful; it simply means that they cannot provide a cost-effective, dynamic solution for the overall consistency of the internal compliance system. Additionally, consolidating, reporting, and business intelligence applications are frequently added on top of ERP systems to provide specific views of the underlying internal data. The persistent proliferation of manually created spreadsheets for a wide range of internal and external reporting and analysis purposes is the most pervasive evidence that, for however comprehensive and specialized, these reporting applications still fall short of providing a comprehensive and dynamic solution.

The answer is the standardization of the information rather than standardization based on software applications containing proprietary information models. Proprietary software applications dictate the way in which their resident data is visualized, charted, reported, and analyzed. If data look the same no matter the application in which they were created or currently reside, the user (consumer) can abstract the definition of reports, charts, and analytics that can be reused over time and across different applications, because they can be built on a consistent view of the underlying data. XBRL is optimized to achieve standardization of data and, in this respect, it provides all of the features relevant to business and financial information concepts. These features can be applied to corporate data, regardless of the software in which it is stored, as opposed to having to rely on — and adjust to — the proprietary features of that particular software, or having to integrate the data in spreadsheets or in reporting applications to achieve the same purpose of consistent visualization/analysis.

XBRL provides a software-independent platform to create an abstraction layer of relevant business information concepts (e.g., information models, definitions, business rules, controls, relationships, etc.) that can be accessed and executed by a wide range of software applications relevant to business processes. This abstraction layer enables the standardization of business information that can be accessed and applied across all software applications.

The XBRL Global Ledger Framework — XBRL for Internal Use. So far, we have described uses of XBRL that rely on the resources made available by the XBRL specification to abstract the conceptual components of a business report: reporting concepts, labels, documentation, periods, entities, references, and business rules. The structure of the specific reports being represented is not important at this level: any structure represented in an XBRL taxonomy will do, since the XBRL specification provides the basic resources required to represent it in a standardized format. Different reports will be represented with different taxonomies — IFRS, U.S. GAAP, other local GAAPs, taxonomies developed by an organization for specific internal reporting purposes — and regardless of the specific taxonomy used, all the benefits analyzed so far will be achievable.

On the other hand, to achieve the even greater benefits of data standardization that are available when we move deeper into the corporate information system and closer to the source of the data that ultimately roll up to end reports, a more constrained data model is required to process data in a standard, application-independent manner. As mentioned, a specific XBRL taxonomy — the XBRL GL — provides that model.

XBRL GL is an agreement reached within the XBRL International Consortium on how to use XML and other related technologies (XML namespaces, XML Schema, or XLink) to represent data and documents found in operational and accounting system ledgers and subledgers, such as accounting entries, trial balances, charts of accounts, payroll information, AR/AP, inventory items, statistical indicators, and more.

It has been built with the contribution of major world players (software companies, consulting firms, tax authorities, and other regulators) and incorporates the experience and lessons learned from other data standards like EDI, UN-CEFACT, and many others. It provides models to represent relevant information (trial balance, journals, documents, etc.) and, more importantly, a standard, efficient way to link them to multiple end reports (XBRL ER taxonomies). Implementing XBRL GL and XBRL ER means addressing basic, pervasive issues in any corporate environment — integration of data in different applications, reconciliation of end reports, and audit trail, to name only a few — in a transparent and automated way, and achieving compliance with regulatory mandates as a bonus benefit along the way.

There are three primary approaches to XBRL implementation: bolt-on, built-in at the reporting writing application level, and built-in at the embedded ledger/system level. The table in Figure 2 demonstrates the relationship between how deeply XBRL is embedded into a corporate information system and the kind of XBRL implementation this enables.

Figure 3
Implementation Matrix

	1. XBRL Global Ledger	2. XBRL for Internal Reporting	3. XBRL for External Reporting
Bolt-on Plain conversion of pre-generated end reports	No	No	Yes
Built-in At reporting writer applications level	No	Yes	Yes
Built-in Deeply embedded in ledgers/systems	Yes	Yes	Yes

Obviously, the complexity of the implementation and the need for careful planning grow as we move from a bolt-on to a deeply built-in approach. However, the related benefits are just not comparable, because the joint use of XBRL GL and XBRL for end reporting enables automation and transparency in

key and pervasive processes that are currently mostly manual. Costs also grow in the same way, but it clearly makes no sense to compare the costs of a bolt-on implementation for immediate compliance purposes with the costs of a built-in implementation that addresses much more comprehensive issues and achieves the same compliance as an additional benefit.

Also, when comparing bolt-on versus built-in approaches, it is important to take into consideration how XBRL mandates are expected to evolve in the short/medium term. Consider the example of the SEC mandate, where this evolution is already known and mandated by the rule: In year 1, the SEC requires tagging only the face of the financial statements, while in year 2, the financial statement footnotes and financial statement schedules also will have to be tagged in detail. This translates into a process that is significantly increased in complexity. The number of elements alone will increase from about 300 in year 1 to about 3,000 in year 2. This dramatic increase in the level of tagging requirements provides in itself an economic incentive to migration from a mainly manual assembly process — the bolt-on approach — to the more automated assembly processes outlined below. A bolt-on solution that responds to the first-year requirements may simply not be scalable to the second-year requirements and beyond.

Below is an overview of use cases for each of the three levels of XBRL implementation that we identified and a summarization of the associated costs and benefits:

Bolt-on

Use cases: Most of the participants in the SEC Voluntary Filing Program have used this approach. See the list in the SEC's Web site at http://www.sec.gov/spotlight/xbrl/interactivedata.htm#idata_who

Relevant case studies can be found in the XBRL US Web site at:
http://xbrl.us/Documents/XBRL_all_case_studies.pdf

Implementation: The relevant reports are generated by the ERP or consolidating/reporting application in use in a traditional format — typically Microsoft Office or something similar. Next, an XBRL mapping application is used to map the result to the appropriate XBRL end reporting taxonomy. The post-production mapping process also can be outsourced.

Costs: The SEC's proposed rule, "Interactive Data to Improve Financial Reporting" (May 30, 2008), includes an extensive analysis of the estimated direct cost related to XBRL filing. In synthesis, the average cost of first submission is estimated at US \$30,933 for the first year and US \$9,060 for the second year. Since these estimates are based on the data provided by participants to the SEC Voluntary Filing Program, and these included organizations that operate in XBRL-related businesses and are likely to have an advantage in the implementation of the technology, the SEC indicates that these figures should be increased by 20 percent to take this into consideration.

Benefits: There is no change — and no benefit — in the reporting process from the filer perspective, and one of the most useful features of XBRL for data producers, standardization, and reusability of data is not really leveraged. The benefits from the filer perspective are mainly related to the automation of the report generation and validation process — once the mapping of the source documents has been manually created using the XBRL tool — and to the opportunity to gain a real understanding of XBRL both from a business and technical perspective and start planning its broader application. Careful consideration also should be given to the expected evolution of XBRL reporting requirements — see year 2 SEC mandate requirements discussion earlier in this section.

Built-in: At Report-writing Applications Level

Use cases: United Technologies Corporation (UTC). See “ROI on XBRL” article in the June 2007 issue of *Journal of Accountancy*,
<http://www.journalofaccountancy.com/Issues/2007/Jun/RoiOnXbrl.htm>

Implementation: A requirement for this kind of XBRL implementation is that the consolidating/reporting application in use (such as Hyperion, Cognos, etc.) natively supports the mapping to XBRL taxonomies. This allows organizations to embed XBRL in the reporting process rather than using an XBRL mapping tool subsequent to the reporting process.

Costs: UTC indicates a reduction of time and costs in the corporate reporting process by 25 percent.

Benefits: The UTC use case highlights several pervasive problems that XBRL was specifically designed to address, including:

- Contextual review of draft report disclosures versus linear paper document review.
- Collaborative review of draft reports versus distribution and comment upon individual electronic documents.
- Automated assembly of the entire report in a report writer application — versus two separate processes, one for the general ledger type of data and one for everything else, with manual assembly in Word/Excel.
- Automated aggregation of the whole report versus manual spreadsheets’ aggregation of notes and MD&A disclosure details.

Built-in: Deeply Embedded in Ledgers/Systems

Use cases: At this level, XBRL implementations are not as publicly discussed as the ones geared toward external reporting, since they mostly deal with internal processes. There are many examples, but the two main use cases that have been publicly discussed so far are The Wacoal Corp. (http://www.imanet.org/research_technology_reading.asp#4) and Fujitsu Group (<http://18thconference.xbrl.org/sites/18thconference.xbrl.org/files/hanaoka.pdf>).

Implementation: The enabler of this type of implementation is XBRL Global Ledger (GL), used alone or in conjunction with end reporting XBRL taxonomies for internal or external reporting. At the time of the decision to turn to XBRL, both Wacoal and Fujitsu faced the same challenges, though for different reasons: Either reorganize the whole group’s information system around one main ERP application, or leverage XBRL GL to achieve connectivity between each component of the existing system.

Another important point to make about the implementation of XBRL at the ledgers level is that it allows great flexibility in terms of gradual application to single processes. The standards-based process reengineering enabled by XBRL GL by definition does not replace the existing IT infrastructure; it complements it by filling the gaps that are usually addressed by manual processes. This means that its implementation can be gradual and initially address one single process deemed particularly significant or appropriate for this kind of approach, use it as a pilot to test the technology

and promote internal awareness and build skills, and then gradually extend it to other processes/units in the corporate environment. See [GLG1] for more insight on this topic. Also, Section 6 has additional information and resources on how to implement XBRL GL in a corporate environment.

Costs: The broad scope and impact of this kind of implementation obviously makes it very difficult to provide costs estimates, since they depend on many factors — such as the size of the organization, its structure, and the overall purposes of the implementation — that can vary significantly. There are, however, consistent indications that the cost and time for completion of an XBRL-based solution that enables standards-based interoperability between existing systems are a fraction (half to one-third) of those estimated for the alternative of restructuring the corporate information system around a new ERP application. In addition, as the XBRL GL standardization approach creates an abstraction layer for the information models, processes, analytics, controls, etc., these concepts can be retained as the underlying software applications are transitioned to newer releases, thereby lowering “exit costs” associated with versioning the underlying software applications.

There are two additional use cases that have been previously discussed — see Section 3, Overview of XBRL. Even though they are not implementations of XBRL for internal use, they provide additional insight on the significant savings generated by the process changes made possible by the adoption of XBRL:

- The **Standard Business Reporting** (SBR) project is reducing the compliance burden for businesses in the countries where it is being implemented. In the Netherlands, the country where SBR is in its most advanced stage of implementation, cost savings have been conservatively estimated to be \$350 million euros. Similar benefits can be achieved in the corporate environment by using XBRL to create a standardized view of internal business data and information, and by using it as the foundation for an interactive, actionable manual of internal policies and auditing procedures/controls.
- The **U.S. FFIEC/FDIC** XBRL-based implementation and deployment of standardized validation rules, with overwhelming benefits achieved as a direct consequence. This same model applied to internal business rules and controls in a corporate environment will determine even more significant efficiencies and cost savings, given the pervasive process issues that it can successfully address.

Benefits: The benefits are pervasive and not comparable with those enabled by the implementation of XBRL for end reporting because they enable pervasive process changes in crucial areas for internal reporting and auditing, like systems interoperability, implementation of a logical versus a physical data warehousing approach, application of consistent views and consistent business rules across the whole organization, and more. All of the benefits of the previous forms of implementation are achieved as a natural consequence, leveraging the standardized links between XBRL GL and XBRL taxonomies for end (both external and internal) reporting.

6. XBRL Applications Beyond Regulatory Filings

XBRL is a business reporting supply chain standard. As such, it has a very significant impact on benefits over the system as a whole, even if considered only in its regulatory focus. The estimates in terms of significant savings for businesses from projects like SBR support this assessment.

Throughout this document the point has been made that from the perspective of data producers, the value proposition of XBRL for external/regulatory reporting is still only the tip of the iceberg. The real value lies in the application of XBRL for internal purposes. The use cases mentioned above help put this concept into a practical perspective; we now need to more specifically identify the pervasive processes that the internal use of XBRL enables us to redefine.

The benefits of XBRL have long been compared with those brought by the adoption of barcodes in the retail grocery and distribution supply chain: XBRL enables business and accounting data standardization just like the barcode standardizes product descriptions. The analogy can be brought one step further: Barcoding goods only when they reach store shelves would still be beneficial, but the benefits lost in the previous steps of the supply chain would be huge in comparison. In the same way, how *early* data standardization is implemented in the business reporting supply chain — which ultimately means how near to the transactional layer data is standardized identify — determines the range and type of processes that can leverage that standardization.

According to Financial Executives International (FEI), processes that can benefit from data standardization fall into four broad categories:

1. Systems integration.
2. Data access, assembly, and overview.
3. Data quality. Validation at the source of data by applying consistent, application-independent business rules versus traditional “cleaning” at data consumption point.
4. Spreadsheets. Redefinition as user interfaces/dashboards versus unmanaged storage facilities for data.

For all of the processes that belong to these categories, the practical opportunities for enhancement and redefinition come from:

- The elimination of one-way interfaces between systems — manual or automated.
- The elimination of manual reconciliation processes at all levels of data summarization.
- The seamless traceability of any information to its source.
- The reusability of consistent templates for visualization, validation, and analysis across applications/entities.

Examples of specific relevant processes include:

- Spreadsheet aggregation processes.
- Report assembly and review processes.
- Retrieving and consolidating business information.
- Defining and applying validation and analytical rules.
- Articulating and applying controls.
- Business intelligence.
- Performance management processes.

Here is an example of the process enhancements that XBRL enables in a major area of concern — spreadsheet aggregation:

Current Situation	Prospective Situation
Source data contained in a range of disparate ledger applications	Source data contained in a range of disparate ledger applications
Standard reporting forms contain data requirements for operational and external reporting needs across all business units	Standard reporting forms contain data requirements for operational and external reporting needs for each individual business unit
Validation and analysis are a consumer's responsibility	Validation and analysis are a preparer's responsibility
Manual input at many levels	Automated input at many levels
Layers of manual aggregation, review, and analysis	Layers of automated aggregation, review, and analysis
Enterprise chart of accounts and related policies manually maintained and distributed	Enterprise chart of account and related policies logically maintained and automatically available

A question that is frequently asked about XBRL is whether it helps or hurts in maintaining the security and privacy of data. From a technology perspective, XBRL is “security neutral” in the sense that it is neither more risky, nor more secure, than other traditional formats for sharing and storing data. However, XBRL is an XML dialect and therefore does enable the application of other XML-based concepts relevant to security such as “XML Signature and Encryption,” which is specifically designed to enhance the security and privacy of data. From a process perspective, there is no doubt that XBRL enables process enhancements that can also benefit this particular perspective, and that standardization is beneficial in maintaining security and privacy.

In conclusion, in any information system, data are intrinsically connected to the applications in which they were generated or are stored, and they are typically accessed via the user interfaces available in those

applications. When those interfaces do not meet specific requirements for data visualization/analysis, the proliferation of spreadsheets or the creation of one-way interfaces to transfer the data to other applications occurs. Both alternatives are costly and labor-intensive, error-prone, and not conducive to a seamless audit trail. XBRL enables a standards-based approach, where not only data, but also the business rules to validate and process them and the templates for their visualization and analysis can be abstracted from specific software applications and consistently accessed/applied across the whole corporate information system. This eliminates key, recurrent challenges that internal auditing faces repeatedly in every corporate information system.

In addition, it achieves compliance with regulatory mandates. An end-to-end example of the power that the abstraction of data and rules from proprietary applications enables is the Convergence Assistant found at <http://www.convergenceassistant.com>. XBRL GL is used to standardize trial balance-level data and link it with reporting concepts in two (or more) different end reporting XBRL taxonomies, like a local GAAP taxonomy and the IFRS taxonomy. The benefits for IFRS convergence, but also more broadly for the automated generation and reconciliation of different end reports — internal or external — are evident.

One additional concern that needs to be addressed is the “how,” as in, how do I map my corporate data to/from XBRL GL? What software can I use? Where do I start?

A common misconception is that to achieve the benefits of internal implementation of XBRL, ERP applications and other software packages used within the corporate information system must support XBRL natively. While this is obviously a good thing, it is actually not necessary for two reasons:

- The implementation of XBRL GL only requires that accounting and ERP packages support XML as an input/output format. This is the case for many, probably even most, existing software packages. If XML is used or supported within your corporate information system, you probably already have all you need to implement XBRL GL.
- In cases where XML is not supported, off-the-shelf applications that offer capabilities to convert from virtually any source application or format to XML and back are widely available for a limited cost (a few hundred U.S. dollars). These XML mapping tools provide a solution that is very effective and, in some cases, even preferable to native mapping capabilities; they provide a single interface and environment for tagging and conversion of all applications in use in the corporate environment, and they can integrate legacy applications that may not be XML-enabled, usually present in any information system.

More information on how the implementation of XBRL for internal use can be approached can be found at <http://www.iphix.net/resources/howto.htm>. The mapping demo provided at <http://iphix.net/resources/mapping/index.htm> demonstrates the use of an XML mapping tool to convert source data into XBRL GL instance documents, and the demo called Project Nunavut (<http://www.iphix.net/resources/nunavut.htm>) is a demonstration of how data standardization with XBRL GL can be leveraged to access and analyze corporate data across disparate applications with a single, consistent, and standardized user interface.

7. What Does It All Mean for Internal Auditing?

What is the current status of XBRL adoption? What is internal auditors' involvement in XBRL implementation process, if any? The IIA conducted an XBRL survey in early September 2008 to find the answers to the above questions. More than 200 chief audit executives worldwide, such as auditor generals and directors, participated in the survey. Here are some highlights of the survey:

- 51 percent of internal auditors do not have any XBRL knowledge at all, and 42 percent know only the basics.
- Only eight percent of respondents say that their organizations are currently filing financial reports in XBRL format, but more than 37 percent say that this will happen in the next three years.
- Among those organizations that file financial statements in XBRL format today, only four respondents say they play some role.
- The survey results state that 52 percent of respondents' organizations chose an in-house approach, and 48 percent chose a co-sourcing or outsourcing approach when implementing and creating financial reports in XBRL format. No respondents say XBRL is used in the organization's internal process other than financial reporting.
- The majority of the respondents state that they use the country-specific accounting standards, such as U.S. GAAP; only 17 percent currently use IFRS.

The relevance of the processes described so far for internal auditing is evident. The basic **implications** of the application of XBRL to those processes from an internal audit perspective are a direct consequence of:

- The migration from manual to automated processes in key activities.
- The ability to more efficiently access and integrate entitywide data.
- The abstraction of business rules and controls that can be applied across a wide range of software applications.
- A lower cost operating environment.

Another major driver for increased efficiency with significantly lower costs for internal audit processes is that XBRL enables the definition of **a broader set of monitoring controls and assessments** that are not constrained by application-specific requirements and limitations and that are applicable, shareable, and executable across the whole corporate information system. This makes traditional sampling-based auditing much more efficient and less resource consuming, and ultimately enables 100 percent testing. Together with the shift from manual to automated processes based on data and business rules standardization, it also enables a **continuous auditing and monitoring** approach, where auditing is exception-based and optimized through a “wedding cake” layering of the relevant business rules. Each layer includes rules that are applied on the exceptions generated by the application of the previous layer

of rules, and this minimizes the number of false positives while testing the whole universe of corporate data, including data that reside outside the main software applications.

The ability to **connect relevant resources to specific data concepts** in a standardized, application-independent environment also carries a particular significance for auditing processes. Relationships, labels, references to authoritative guidance and internal policies, libraries of business rules, entities, assertions, risks, and controls can be referenced directly from each data point in any report, which becomes like a browser for the relevant corporate intellectual property. In turn, the corporate intellectual property around internal auditing and the internal audit manual become “executable” and immediately available where and when needed. This impacts not only the actual auditing processes, but also training and resourcing.

Finally, it may be useful to provide a snapshot of the process enhancements that XBRL enables as well as of some implications that are particularly significant for internal auditing, organized by broad area of relevance.

Sarbanes-Oxley and Internal Controls

- Improving report review and assembly processes.
- Reducing spreadsheet proliferation.
- Reducing/eliminating manual controls.
- Eliminating manual data access across disparate information sources.
- Rationalizing disparate and redundant controls that are application-specific rather than purpose-specific. Controls can now be defined in a separate, cross-enterprise layer and executed externally to specific applications.
- Improving manual documentation and manual assessment of controls.
- Increasing the power of standard audit tools (ACL, IDEA, etc.) not only because XBRL enables a better, more comprehensive integration of data from disparate applications in these tools, but also because validation and business rules for data cleaning can now be centrally defined and deployed in the applications where the data is generated rather than in the consuming application/audit tool.
- Enabling the use of spreadsheets for what they do best — provide a useful and effective user interface to access corporate data and analyze them — as opposed to being used as data integration and storage facilities where the connection with the originating transactions and systems (and, in general, the audit trail) is lost.

Internal Auditors' Considerations for XBRL Filings

As discussed, the SEC rule explicitly states that XBRL documents provide supplementary information and do not replace the current filings. This means that XBRL documents do not currently have to be audited, even though it is easy to envision this situation changing in the not-so-distant future. Nonetheless, even in the current situation, organizations will want to produce and submit complete and

accurate XBRL filings. This determines the need to start a discussion on the appropriate criteria that have to be applied in generating those documents, as well as in providing an opinion on their level of accuracy and consistency.

Although discussions on this topic are ongoing at various levels, including regulatory entities and relevant professional associations in the United States and internationally, it is simply too early to identify universally accepted principles and procedures. It is an area that requires broader thought and discussion, even though the basic processes that will require attention and further consideration can already be identified, including:

- XBRL instance documents are based on XBRL taxonomies. In the case of SEC filings, the taxonomy will typically be the U.S. GAAP taxonomy (see: <http://sec.gov/spotlight/xbrl/xbrlusfrv1.htm> for more information) or the IFRS taxonomy (see: <http://www.iasb.org/XBRL/IFRS+Taxonomy/Latest+Taxonomy/Latest+taxonomy.htm>).

Regardless of which taxonomy is used in a particular reporting context, it can be, and usually is, extended to meet specific requirements of the organization that generates the report. An extension can add new elements to the ones predefined in the taxonomy or change relationships or other attributes of existing elements to better meet the organization's reporting content and style. A first, broad area of consideration is whether the extension is made in an appropriate fashion with respect to the organization's requirements and compliance with the XBRL specification.

- Another important area of consideration is whether the tagging of the organization's financial statements or other filings to the taxonomy used, whether it has been extended or not, is appropriate and complete.
- The end result of the tagging process, the XBRL instance document, should be comparable with the source document or documents. This apparently simple statement poses a challenge because XBRL documents are made for computer consumption rather than for human understanding. The extent to which this requirement is fulfilled also may depend on the solution used to render the XBRL document for human understanding purposes, which is another area for further discussion and consideration.
- There are other technical aspects related to the compliance of an XBRL document; not only to the XBRL specification, but also to best practices in the creation of XBRL instances that need to be taken into consideration. In this respect, it may be helpful to analyze the Public Validation Criteria compiled by the SEC; not as a requirement, but as a way to assist and support XBRL filers (see <http://sec.gov/spotlight/xbrl/publicvalidationcriteria.htm> for more details).

In conclusion, XBRL is obviously something that all organizations will have to deal with sooner or later, but it is also something that has a value that goes beyond what they will be required to do with it by regulatory mandate. Now, we will look at how early adopters of XBRL faced the challenges of its implementation in ways that address different requirements and perceptions on its overall value proposition.

XBRL as an Audit Tool and Aid

- Improving profiling and risk assessments.
- Improving data access and analysis.
- Enabling deeper data access and analysis.
- Creating and maintaining XBRL taxonomies to represent libraries of controls, rules, procedures, and entities, which become dynamically available where needed.
- Accelerating the use of continuous auditing and monitoring.
- Machine-readable process and controls documentation.
- Improving two-way audit trails/seamless audit trail.
- Improving the knowledge domain of relevant audit resources via the “executable audit manual” described above.
- Facilitating consumer-oriented reporting and the creation of customized dashboards for specific groups of information consumers (for example, company audit committee, management, or external auditors).
- Redefining the collaboration and the exchange of information with external auditors by enabling a model based on standardized data and a shared and “executable” definition of risks, procedures, and controls. This model will allow substantial savings of time and resources, both for internal and external auditors.
- Facilitating retention by providing a standardized format for business information and documents archival that does not depend on the availability of a specific version of the software originally used to create and store the data.

XBRL as an Audit Domain for Corporate Reports

- Applicable external audit standards. There is little public documentation available on XBRL from the U.S. Public Company Accounting Oversight Board (see: http://www.pcaobus.org/Standards/Staff_Questions_and_Answers/2005/05-25%20.pdf) and IFAC (which has determined to study XBRL) and no specific Generally Accepted Auditing Standard (GAAS) exists on XBRL.
- Impact on audit approaches. The process enhancements described in this document have the obvious effect to facilitate the application of a risk-based auditing approach. Also, XBRL lowers the bar for the implementation of rules-based approaches to internal and external auditing.
- Audit issues specific to using XBRL. The migration from manual to automated processes makes some controls unnecessary and redefines the nature of others, but it also generates the need for new controls that become relevant in an XBRL-enabled environment. The discussion in this area

is ongoing and likely will evolve as implementation experience increases, but there are some broad issues that can already be identified and addressed, including:

- Taxonomy related: use of an appropriate taxonomy, of its appropriate version, corporate extensions.
 - Data mapping related: consistency and completeness of the mapping process.
 - Compliance with the XBRL specification and relevant best practices.
- Security risks in the generation of XBRL documents. There is no specific risk strictly related to the generation of XBRL instances versus more traditional types of reports, such as generating a PDF or an Excel file with the same content.

8. Where to Go From Here

Like no other technology, XBRL is the place where both IT and “business” backgrounds meet and play an active role in the adoption and implementation process. Awareness and education on the real scope of XBRL (for regulatory reporting and beyond) is the most important next step.

At the same time, there are some very practical steps that can be taken immediately to help your organization form a strategy for XBRL adoption. For organizations that must report to the SEC, this is the time to start an evaluation of the internal audit implications of the mandate and other related reporting processes. The same applies to organizations worldwide that are subject to other upcoming XBRL filing programs.

Another useful step would be to identify and prioritize areas within the corporate information system that are logical candidates for the application of a standards-based approach to validation and business rules, including:

- Manual control processes where automation would bring the most significant benefits.
- Areas of priority for the application of rules-based compliance testing.
- Automation of persistent control assessments across disparate systems (e.g., payables controls).

More generally, there is an opportunity for internal auditors to migrate from a highly manual testing environment to a more automated and controlled processing environment. Developing a plan to address the most pervasive pain points within the corporate environment in a structured and standardized fashion is possible and, as discussed, can be done gradually, leveraging the fact that a standardized approach does not require substantial changes in the existing IT infrastructure, but rather enables greater processes automation within the existing environment. Helpful resources to help you achieve these goals are included below.

a. Training

To enable internal auditors to address the challenges associated with the XBRL conversion, The IIA provides training in two-hour Internet webinars and traditional classroom sessions. To learn more, visit www.theiia.org/iaa-training.

Professional training is also available from XBRL vendors and consulting firms. Training sessions are usually scheduled at the XBRL international conferences, both for XBRL for external reporting and for XBRL Global Ledger. These conferences are held twice a year. Information on the upcoming conference can usually be found at <http://xbrl.conference.org>.

b. Tools

A list of XBRL-specific tools maintained by the XBRL International Consortium can be found at <http://www.xbrl.org/tools>. As discussed, the implementation of XBRL GL does not necessarily require an XBRL tool; a search in Google of “xml mapping tools” will generate as results in the first page are the most commonly used applications for the purpose.

c. Resources

Appendix B provides a list of helpful links and miscellaneous resources.

Appendix A - Suggested List of Additional Resources

On XBRL in General

XBRL International Web Site

- Products and Services: <http://www.xbrl.org/productsandservices/>
- Public Discussion Groups: <http://www.xbrl.org/GroupsPublic/>
- Project White Papers: <http://www.xbrl.org/ProjectDetails/>
- General Education: <http://www.xbrl.org/EducationAndTraining/>

Others

- Internal auditors can visit The IIA Web site for a list of XBRL training courses:
www.theiia.org/iaa-training
- IMA Suggested Reading: http://www.imanet.org/research_technology_reading.asp
- CFO.com XBRL site: <http://www.cfo.com/guides/guide.cfm/8310234>

Focus on XBRL for External Reporting

U.S. Securities and Exchange Commission Site

- Spotlight on XBRL: <http://www.sec.gov/spotlight/xbrl.htm>
- XBRL Submissions: <http://www.sec.gov/Archives/edgar/xbrl.html>
- XBRL Interactive Viewing tool: <http://www.sec.gov/spotlight/xbrl/xbrlwebapp.htm>

XBRL — U.S. Web Site

- <http://www.xbrl.us>: See Webinar Archive under the 'Events' tab.
- Case Studies: http://xbrl.us/Documents/XBRL_all_case_studies.pdf
- U.S. GAAP Taxonomies and Supporting materials: <http://xbrl.us/Pages/US-GAAP.aspx>

Focus on XBRL Global Ledger

- XBRL GL section in XBRL International Web site: <http://www.xbrl.org/GLTaxonomy/>
- GaLaPaGoS — Global Ledger Practice Guide for Study: <http://www.gl.iphix.net>
- Getting Started with XBRL GL: <http://www.iphix.net/resources/howto.htm>
- XBRL GL white paper, XBRL Ledger white paper: <http://www.imanet.org/pdf/8xbrl.pdf>

Online Demonstrations and Tools

- Microsoft Investor Central: <http://www.microsoft.com/msft/IC/default.aspx>
- Executive Compensation Widget: <http://www.ibanknet.com/widgets/index.shtml>
- Sample “built-in” tagging example: Google OneBox: <http://www.iphix.net/resources/nunavut.htm>
- An example of the end-to-end application of XBRL GL and XBRL for external reporting to facilitate IFRS convergence: <http://www.convergenceassistant.com>
- Sample “bolt-on” tagging examples: XBRL U.S. Free Webinars Archives: <http://xbrl.us/events/Pages/archive.aspx>
- **How to Participate in the SEC XBRL Voluntary Filing Program** — Tuesday, October 23, 2007 — 1 hour 30 minutes. Minute 16 for demo by Rivet Software.
- **How to Participate in the SEC XBRL Voluntary Filing Program** — Tuesday, August 21, 2007 — 1 hour. Minute 18 for demo by United Technologies Corporation.

Suggested Readings

ROI on XBRL: <http://www.aicpa.org/pubs/jofa/jun2007/stantial.htm>

FFIEC White Paper: <http://www.xbrl.org/us/us/FFIEC%20White%20Paper%2002Feb2006.pdf>

‘XBRL for Dummies’: <http://www.xbrlfordummies.com>

The Hitachi XBRL Blog at <http://blog.hitachixbrl.com> and in particular:

- <http://blog.hitachixbrl.com/2006/10/05/welcome/>

- <http://blog.hitachixbrl.com/2006/12/08/adaptation-or-evolution-what-is-your-xbrl-strategy/>
- <http://blog.hitachixbrl.com/2007/01/16/the-entity-problem/>
- <http://blog.hitachixbrl.com/2007/01/30/relationships-matter/>
- <http://blog.hitachixbrl.com/2007/02/13/in-pursuit-of-process/>
- <http://blog.hitachixbrl.com/2007/01/09/master-data-management-the-xbrl-way/>

Appendix B - Glossary

Concept: An XBRL element defined in the XML Schema portion of an XBRL taxonomy to represent a piece of information that can be reported about a business activity or process. For example, the element with the name “CashAndCashEquivalents” is a concept.

Data Producers: The term is used in this paper to identify businesses and other entities that generate data that is submitted to others for consideration or analysis, such as filers that submit data to regulators or analysts. Data producers in XBRL terminology are also referred to as preparers.

Element: One of the basic components in an XML document. It has a name and additional mandatory and optional attributes/values pairs. It provides the foundation for the tag that will describe values that appear in an instance document. In the following example, <book author=“Dante Alighieri” date=“ca 1321”>Divine Comedy</book> “book” is an XML element, “author” and “date” are attributes, “La Divina Commedia” is the value of the element.

Fact: An XBRL concept referred to a specific period of time with a value that appears in an XBRL instance document.

Linkbase: An XML file, defined by the XBRL specification, designed to give information about the XBRL elements in a taxonomy (and in the case of the footnote linkbase, in an instance document). A linkbase is composed of links between two XBRL concepts defined in a taxonomy (such as in the presentation linkbase, which organizes concepts in a taxonomy in a way that is understandable for a human reader), or links between one XBRL concept and a resource related to it (such as in the label linkbase, which links concepts in an XBRL taxonomy to one or more labels — descriptions assigned to the concept for different purposes or in different languages). Other XBRL linkbases defined in the XBRL specification: definition, reference, footnote, and calculation.

Preparers: See Data Producers.

Specification: In the context of this paper, the term is used to refer to a document that describes in a complete, precise, unambiguous manner the requirements, constraints, expected behavior, and — in general — all the relevant characteristics of a system that is compliant with the specification considered. Standards like XML, XBRL, and others quoted in this paper are based on a specification.

Tag: An element name assigned to a piece of information that can be used to unambiguously identify it. For example in <cash>1000</cash> the word “cash” together with the angle brackets “<” and “>” is a tag; there are opening tags: <...> and closing tags: </...> which are recognized by the use of the backslash“/” before the tag name.

Tagging: The process of assigning a tag to a piece of information.

Taxonomy: One (or more) XML Schema(s) that defines new XBRL elements, each corresponding to a concept that can be referenced in XBRL documents, along with linkbases that express relationships among those concepts or between one concept and other information related to it — see linkbase for more detail on the various types of linkbases available in an XBRL taxonomy.

XBRL Instance Document: An XML document containing concrete elements (facts) that together constitute one or more business reports. For example, the financial statements of XYZ Inc. for the year ending on December 31, 2007, expressed in XBRL would be an XBRL instance document.

XML: Extensible Markup Language, a World Wide Web (W3C) Consortium recommendation designed to express, transport, and store structured documents and data, with a particular focus on sharing them over the Internet.

XML Schema: A way to describe and constrain the content of XML files by indicating which elements are allowed and in what order, other constraints such as the data type that each element must have (date/time, string, number, etc.), and additional rules for the validation of XML data, such as what characters are allowed as content of a string element, what interval is considered valid for a specific date/time or number element, etc.

Appendix C - References

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